FIRST QUANTUM MINERALS LTD.

NOTICE OF COMMISSIONING

1824-A-NOC-100

MINERA PANAMA
COMMISSIONING IN PROGRESS
PUESTA EN MARCHA EN PROGRESO
The purpose of this TAG is to IDENTIFY EQUIPMENT which is still in the commissioning phase.
El propósito de esta ETIQUETA es para IDENTIFICAR el EQUIPO que está bajo la etapa puesto en marcha.
This equipment must not be operated without the Permission of the Commissioning Manager or Authorised Nominee.
No operar este equipo sin el Permiso del Director de Comisión o del Designado Encargado.
This Tag can only be removed by the Commissioning Manager or Authorised Nominee.
Solo el Director de Comisión o Designado Encargado puede quitar esta Etiqueta.
SEE OTHER SIDE / VER EL REVERSO

Date: April 22, 2018 – 07:00 am

System ID:0-205-2

System Description: Unit 2 – Boiler Building Sumps and Drains

Contact Name: Julian Blair, Brenton Sherston & Milton Cabanillas, Norman Tarran & Ron Freiley , Charles Lee

Contact Number: 63799990, 64422720 & 69804755, 66197102 & 69804558, 6482 2269

Fecha: 22 de Abril del 2018 - 07:00 am

ID Sistema: 0-205-2

Descripción del Sistema: Sumideros y drenes del edificio de turbina de la unidad 2

Nombre Contacto: Julian Blair, Brenton Sherston & Milton Cabanillas, Norman Tarran & Ron Freiley , Charles Lee

Número de Contacto: 63799990, 64422720 & 69804755, 66197102 & 69804558, 6482 2269

ENGLISH

All Electrical & Mechanical equipment for U2 turbine building sumps and drains are under commissioning. Access restrictions will be in force. Upon completion the commissioning test, power feed will be reticulated to the equipment's. All equipment access will be locked with appropriate signage. No work is to be conducted on equipment tagged with a Blue Commissioning Tag without approval from the Commissioning Manager. Please see drawings attached.

Commissioning team will begin works in this area on April 22, 2018 at 07:00 AM

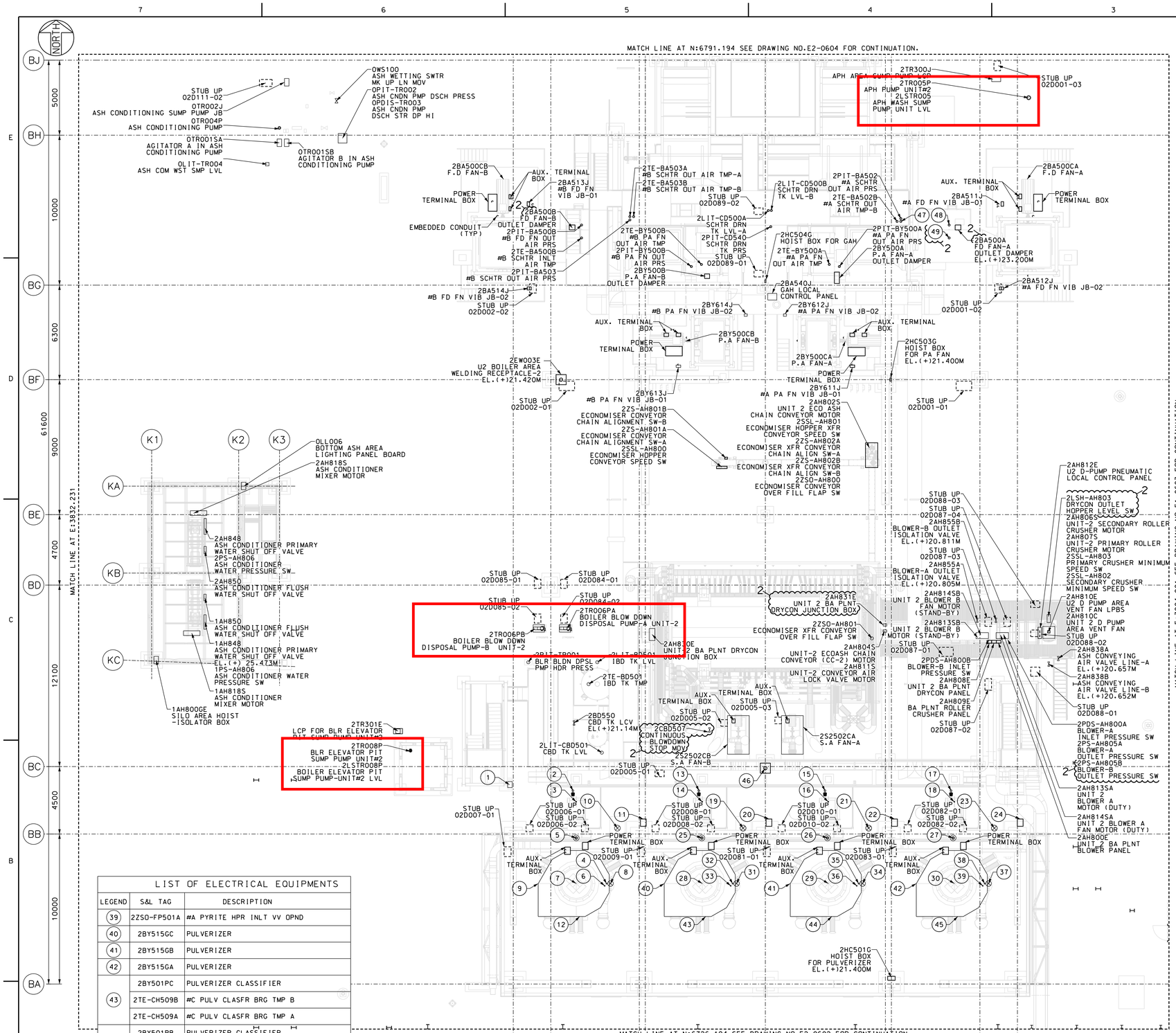
SPANISH

Todos los equipos eléctricos y mecánicos del sistema de sumideros y drenes del edificio de turbina de la Unidad 2 están bajo puesta en marcha. Las restricciones de acceso estarán en vigor para esta área.. Una vez completada las pruebas de puesta en marcha, se pondrá alimentación eléctrica a los Equipos. Todos los accesos a estos equipos se bloquearán con señalización apropiada. No se realizará ningún trabajo en equipos con etiqueta de puesta en marcha color azul y sin la aprobación del Gerente de Puesta en Marcha. Por favor ver planos adjuntados.

El equipo de puesta en marcha iniciará trabajos en esta area el 22 de Abril del 2018 a las 7:00 AM.

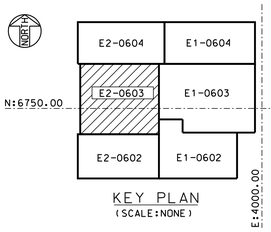
POST ON ALL PACO SAFETY NOTICE BOARDS

PACO MANAGERS & SUPERINTENDENTS TO **ENSURE** THIS **NOC** IS COVERED IN TOOLBOX MEETINGS AND ALL PERSONNEL ARE AWARE OF THE HAZARDS.


NORTH
MATCH LINE AT N:6791.194 SEE DRAWING NO.E2-0604 FOR CONTINUATION.
MATCH LINE AT E:3832.231
MATCH LINE AT E:13904.901 SEE DRAWING NO.E1-0603 FOR CONTINUATION.
MATCH LINE AT N:6726.194 SEE DRAWING NO.E2-0602 FOR CONTINUATION.
OWS100 ASH WETTING SWTR MK UP LN MOV
OPIT-TR002 ASH CNDN PMP DSCH PRESS
OPDIS-TR003 ASH CNDN PMP DSCH STR DP HI
STUB UP 02D111-02
OTR002J ASH CONDITIONING SUMP PUMP JB
OTR004P ASH CONDITIONING PUMP
OTR001SA AGITATOR A IN ASH CONDITIONING PUMP
OTR001SB AGITATOR B IN ASH CONDITIONING PUMP
OLIT-TR004 ASH COM WST SMP LVL
2TR300J APH AREA SUMP PUMP-CC
2TR005P APH PUMP UNIT#2
2LSTR005 APH WASH SUMP PUMP UNIT LVL
STUB UP 02D001-03
2BA500CB F.D FAN-B
AUX. TERMINAL BOX
2BA513J #B FD FN VIB JB-01
POWER TERMINAL BOX
EMBEDDED CONDUIT (TYP)
2BA500B FD FAN-B OUTLET DAMPER
2PIT-BA500B #B FD FN OUT AIR PRS
2TE-BA500B #B SCHTR INLT AIR TMP
2PIT-BA503 #B SCHTR OUT AIR PRS
2TE-BA503A #B SCHTR OUT AIR TMP-A
2TE-BA503B #B SCHTR OUT AIR TMP-B
STUB UP 02D089-02
2LIT-CD500B SCHTR DRN TK LVL-B
2LIT-CD500A SCHTR DRN TK LVL-A
2PIT-CD540 SCHTR DRN TK PRS
STUB UP 02D089-01
2TE-BY500B #B PA FN OUT AIR TMP
2PIT-BY500B #B PA FN OUT AIR PRS
2BY500B P.A FAN-B OUTLET DAMPER
2PIT-BA502 #A SCHTR OUT AIR PRS
2TE-BA502B #A SCHTR OUT AIR TMP-B
2HC504G HOIST BOX FOR GAH
2TE-BY500A #A PA FN OUT AIR TMP
2PIT-BY500A #A PA FN OUT AIR PRS
2BY500A P.A FAN-A OUTLET DAMPER
AUX. TERMINAL BOX
2BA511J #A FD FN VIB JB-01
2BA500CA F.D FAN-A
POWER TERMINAL BOX
2BA500A FD FAN-A OUTLET DAMPER EL.(+)23.200M
2BA514J #B FD FN VIB JB-02
STUB UP 02D002-02
2BA540J GAH LOCAL CONTROL PANEL
2BA512J #A FD FN VIB JB-02
STUB UP 02D001-02
2BY614J #B PA FN VIB JB-02
2BY612J #A PA FN VIB JB-02
AUX. TERMINAL BOX
POWER TERMINAL BOX
2BY500CB P.A FAN-B
2BY500CA P.A FAN-A
2HC503G HOIST BOX FOR PA FAN EL.(+)21.400M
2EW003E U2 BOILER AREA WELDING RECEPTACLE-2 EL.(+)21.420M
STUB UP 02D002-01
2BY613J #B PA FN VIB JB-01
2BY611J #A PA FN VIB JB-01
STUB UP 02D001-01
2ZS-AH801B ECONOMISER CONVEYOR CHAIN ALIGNMENT SW-B
2ZS-AH801A ECONOMISER CONVEYOR CHAIN ALIGNMENT SW-A
2SSL-AH800 ECONOMISER HOPPER CONVEYOR SPEED SW
2AH802S UNIT 2 ECO ASH CHAIN CONVEYOR MOTOR
2SSL-AH801 ECONOMISER HOPPER XFR CONVEYOR SPEED SW
2ZS-AH802A ECONOMISER XFR CONVEYOR CHAIN ALIGN SW-A
2ZS-AH802B ECONOMISER XFR CONVEYOR CHAIN ALIGN SW-B
2ZSO-AH800 ECONOMISER CONVEYOR OVER FILL FLAP SW
OLL006 BOTTOM ASH AREA LIGHTING PANEL BOARD
2AH818S ASH CONDITIONER MIXER MOTOR
2AH848 ASH CONDITIONER PRIMARY WATER SHUT OFF VALVE
2PS-AH806 ASH CONDITIONER WATER PRESSURE SW
2AH850 ASH CONDITIONER FLUSH WATER SHUT OFF VALVE
1AH850 ASH CONDITIONER FLUSH WATER SHUT OFF VALVE
1AH848 ASH CONDITIONER PRIMARY WATER SHUT OFF VALVE EL.(+) 25.473M
1PS-AH806 ASH CONDITIONER WATER PRESSURE SW
1AH818S ASH CONDITIONER MIXER MOTOR
1AH800GE SILO AREA HOIST -ISOLATOR BOX
STUB UP 02D085-01
STUB UP 02D084-01
STUB UP 02D085-02
STUB UP 02D084-02
2TR006PA BOILER BLOW DOWN DISPOSAL PUMP-A UNIT-2
2TR006PB BOILER BLOW DOWN DISPOSAL PUMP-B UNIT-2
2AH830E UNIT 2 BA PLNT DRYCON JUNCTION BOX
2AH831E UNIT 2 BA PLNT DRYCON JUNCTION BOX
2ZSO-AH801 ECONOMISER XFR CONVEYOR OVER FILL FLAP SW
2AH804S UNIT-2 ECOASH CHAIN CONVEYOR (CC-2) MOTOR
2AH811S UNIT-2 CONVEYOR AIR LOCK VALVE MOTOR
2AH808E UNIT 2 BA PLNT DRYCON PANEL
2AH809E BA PLNT ROLLER CRUSHER PANEL
2PDS-AH800B BLOWER-B INLET PRESSURE SW
2TE-BD501 IBD TK TMP
2IBT-TR001 BLR BLDN DPSL PMP HDR PRESS
2LIT-BD501 IBD TK LVL
2BD550 CBD TK LCV EL(+)21.14M
2CBD507 CONTINUOUS BLOWDOWN STOP MOV
2LIT-CBD501 CBD TK LVL
2TR301E LCP FOR BLR ELEVATOR PIT SUMP PUMP UNIT#2
2TR008P BLR ELEVATOR PIT SUMP PUMP UNIT#2
2LSTR008P BOILER ELEVATOR PIT SUMP PUMP-UNIT#2 LVL
2S2502CA S.A FAN-A
2S2502CB S.A FAN-B
STUB UP 02D005-01
STUB UP 02D005-02
STUB UP 02D005-03
STUB UP 02D087-02
STUB UP 02D007-01
STUB UP 02D006-01
STUB UP 02D006-02
STUB UP 02D008-01
STUB UP 02D008-02
STUB UP 02D010-01
STUB UP 02D010-02
STUB UP 02D082-01
STUB UP 02D082-02
STUB UP 02D009-01
STUB UP 02D081-01
STUB UP 02D083-01
AUX. TERMINAL BOX
POWER TERMINAL BOX
2HC501G HOIST BOX FOR PULVERIZER EL.(+)21.400M
2AH812E U2 D-PUMP PNEUMATIC LOCAL CONTROL PANEL
2LSH-AH803 DRYCON OUTLET HOPPER LEVEL SW
2AH806S UNIT-2 SECONDARY ROLLER CRUSHER MOTOR
2AH807S UNIT-2 PRIMARY ROLLER CRUSHER MOTOR
2SSL-AH803 PRIMARY CRUSHER MINIMUM SPEED SW
2SSL-AH802 SECONDARY CRUSHER MINIMUM SPEED SW
STUB UP 02D088-03
STUB UP 02D087-04
2AH855B BLOWER-B OUTLET ISOLATION VALVE EL.(+)20.811M
STUB UP 02D087-03
2AH855A BLOWER-A OUTLET ISOLATION VALVE EL.(+)20.805M
2AH814SB UNIT 2 BLOWER B FAN MOTOR (STAND-BY)
2AH813SB UNIT 2 BLOWER B FAN MOTOR (STAND-BY)
STUB UP 02D087-01
2PDS-AH800B BLOWER-B INLET PRESSURE SW
2AH810E U2 D PUMP AREA VENT FAN LPBS
2AH810C UNIT 2 D PUMP AREA VENT FAN
STUB UP 02D088-02
2AH838A ASH CONVEYING AIR VALVE LINE-A EL.(+)20.657M
2AH838B ASH CONVEYING AIR VALVE LINE-B EL.(+)20.652M
STUB UP 02D088-01
2PDS-AH800A BLOWER-A INLET PRESSURE SW
2PS-AH805A BLOWER-A OUTLET PRESSURE SW
2PS-AH805B BLOWER-B OUTLET PRESSURE SW
2AH813SA UNIT 2 BLOWER A MOTOR (DUTY)
2AH814SA UNIT 2 BLOWER A FAN MOTOR (DUTY)
2AH800E UNIT 2 BA PLNT BLOWER PANEL
PLAN AT ELEVATION EL.(+)20.200M
33600
2500
5900
8400
8400
5900
2500
400
400
B29 B28 B27 B26 B25 B24 B23 B22 B21
5000
10000
6300
61600
9000
4700
12100
4500
10000

LIST OF ELECTRICAL EQUIPMENTS		
LEGEND	S&L TAG	DESCRIPTION
1	2LL005	U2 BOILER LIGHTING PANEL AT EL.21.4M
2	2PIT-BY506	#D PULV AIR SPLY PRS
3	2TE-BY514	#D PULV AIR SPLY TMP
4	2LSH-BY516D	#D PYRITE HPR LVL SW
5	2TE-BY518A 2TE-BY518B	#D PULV GB THR TMP #D PULV MTR BRG JB TMP (2)
6	2ZSO-FP501D	#D PYRITE HPR INLT VV OPND
7	2TE-BY510	#D PULV OUT AIR TMP
8	2BY516GD	PYRITE HOPPER
9	2BY515GD	PULVERIZER
10	2TE-OL542	#D REDUC GR L-O TK TMP
	2TE-OL541	#D REDUC GR L-O ROLLER BRG TMP
	2PIT-OL504C	#D PULV REDUC GR L-O PRS C
	2PIT-OL504B	#D PULV REDUC GR L-O PRS B
	2PIT-OL504A	#D PULV REDUC GR L-O PRS A
	2OL504P	PULVERIZER LUBE OIL PUMP MOTOR
	2LS-OL515D	#D REDUC GR L-O TK LVL SW
11	2BY510D	PULVERIZER INLET DAMPER
12	2TE-CH510B	#D PULV CLASFR BRG TMP B
	2BY501PD	PULVERIZER CLASSIFIER
	2TE-CH510A	#D PULV CLASFR BRG TMP A
13	2PIT-BY505	#C PULV AIR SPLY PRS
14	2TE-BY513	#C PULV AIR SPLY TMP
15	2PIT-BY504	#B PULV AIR SPLY PRS
16	2TE-BY512	#B PULV AIR SPLY TMP
17	2PIT-BY503	#A PULV AIR SPLY PRS
18	2TE-BY511	#A PULV AIR SPLY TMP
19	2TE-OL532	#C REDUC GR L-O TK TMP
	2TE-OL531	#C REDUC GR L-O ROLLER BRG TMP
	2PIT-OL503C	#C PULV REDUC GR L-O PRS C
	2PIT-OL503B	#C PULV REDUC GR L-O PRS B
	2PIT-OL503A	#C PULV REDUC GR L-O PRS A
	2OL503P	PULVERIZER LUBE OIL PUMP MOTOR
	2LS-OL515C	#C REDUC GR L-O TK LVL SW
20	2BY510C	PULVERIZER INLET DAMPER
21	2TE-OL522	#B REDUC GR L-O TK TMP
	2TE-OL521	#B REDUC GR L-O ROLLER BRG TMP
	2PIT-OL502C	#B PULV REDUC GR L-O PRS C
	2PIT-OL502B	#B PULV REDUC GR L-O PRS B
	2PIT-OL502A	#B PULV REDUC GR L-O PRS A
	2OL502P	PULVERIZER LUBE OIL PUMP MOTOR
	2LS-OL515B	#B REDUC GR L-O TK LVL SW
22	2BY510B	PULVERIZER INLET DAMPER
23	2TE-OL512	#A REDUC GR L-O TKT MP
	2TE-OL511	#A REDUC GR L-O ROLLER BRG TMP
	2PIT-OL501C	#A PULV REDUC GR L-O PRS C
	2PIT-OL501B	#A PULV REDUC GR L-O PRS B
	2PIT-OL501A	#A PULV REDUC GR L-O PRS A
	2OL501P	PULVERIZER LUBEOIL PUMP MOTOR
	2LS-OL515A	#A REDUC GR L-O TK LVL SW
24	2BY510A	PULVERIZER INLET DAMPER
25	2TE-BY517A 2TE-BY517B	#C PULV GB THR TMP #C PULV MTR BRG JB TMP (2)
26	2TE-BY516A 2TE-BY516B	#B PULV GB THR TMP #B PULV MTR BRG JB TMP (2)
27	2TE-BY515A 2TE-BY515B	#A PULV GB THR TMP #A PULV MTR BRG JB TMP (2)
28	2TE-BY509	#C PULV OUT AIR TMP
29	2TE-BY508	#B PULV OUT AIR TMP
30	2TE-BY507	#A PULV OUT AIR TMP
31	2BY516GC	PYRITE HOPPER
32	2LSH-BY516C	#C PYRITE HPR LVL SW
33	2ZSO-FP501C	#C PYRITE HPR INLT VV OPND
34	2BY516GB	PYRITE HOPPER
35	2LSH-BY516B	#B PYRITE HPR LVL SW
36	2ZSO-FP501B	#B PYRITE HPR INLT VV OPND
37	2BY516GA	PYRITE HOPPER
38	2LSH-BY516A	#A PYRITE HPR LVL SW

LIST OF ELECTRICAL EQUIPMENTS		
LEGEND	S&L TAG	DESCRIPTION
39	2ZSO-FP501A	#A PYRITE HPR INLT VV OPND
40	2BY515GC	PULVERIZER
41	2BY515GB	PULVERIZER
42	2BY515GA	PULVERIZER
43	2BY501PC	PULVERIZER CLASSIFIER
	2TE-CH509B	#C PULV CLASFR BRG TMP B
	2TE-CH509A	#C PULV CLASFR BRG TMP A
44	2BY501PB	PULVERIZER CLASSIFIER
	2TE-CH508B	#B PULV CLASFR BRG TMP B
	2TE-CH508A	#B PULV CLASFR BRG TMP A
45	2BY501PA	PULVERIZER CLASSIFIER
	2TE-CH507B	#A PULV CLASFR BRG TMP B
	2TE-CH507A	#A PULV CLASFR BRG TMP A
46	2EW002E	U2 BOILER AREA WELDING RECEPTACLE-1
47	2TE-BA502A	#A SCHTR OUT AIR TMP-A
48	2PIT-BA500A	#A FD FN OUT AIR PRS (2)
49	2TE-BA500A	#A SCHTR INLT AIR TMP



KEY PLAN
(SCALE:NONE)

REFERENCE DRAWING	
1) MO-0001	PLOT PLAN
2) MO-0008	GENERAL ARRANGEMENT BOILER AREA
3) EO-0600	ELECTRICAL LOCATION INSTALLATION KEY PLAN
4) EO-0001	ELECTRICAL GENERAL NOTES & DETAILS
5) E2-0303	DUCT BANK AND MANHOLE LAYOUT BOILER AREA
6) E2-0203	EMBEDDED CONDUIT LAYOUT BOILER AREA UNIT#2

VENDOR DRAWING	
1) 11217D-ME-GA -ME220-P6001-00002	PLOT PLAN OF BOILER AREA
2) 11217D-ME-DS -ME220-P6001-00162	DATA SHEET & DRAWING FOR F.D FAN MOTOR
3) 11217D-ME-DS -ME220-P6001-00166	DATA SHEET & DRAWING FOR P.A FAN MOTOR
4) 11217D-ME-DS -ME220-P6001-00168	DATA SHEET & DRAWING FOR S.A FAN MOTOR
5) 11217D-ME-DW -ME220-P6001-00066	INSTRUMENTATION AND CONTROL LOCATION DRAWINGS (FOR PANELS)
6) 11217D-ME-DS -ME220-P6001-00187	DATA SHEET AND DRAWING FOR HOIST
7) 11217D-EL-DW -MG820-P6014-00001	EDG PACKAGE ARRANGEMENT DRAWING
8) 11217D-ME-GA -MK800-P6035-00005	DRYCON PANEL GA DRAWING
9) 11217D-FF-DW -FIST-P6016-02501	FIRE WATER BOOSTER PUMP SYSTEM LAYOUT (2)
10) 11217D-ME-GA -MK800-P6035-00003	GA OF DRYCON AND BOILER HOPPER UNIT-2
11) 11217D-ME-DW -MK800-P6035-00101	INSTRUMENTATION LOCATION DRAWING

NOTES

1) ALL DIMENSIONS ARE IN MILLIMETERS. ELEVATIONS AND COORDINATES ARE IN METERS. UNLESS OTHERWISE NOTED.
2) FOR GENERAL NOTES AND DETAILS SEE DWG NO: EO-0001 SERIES DRAWINGS.
3) FOR NOTES & LEGENDS REFER DRAWING EO-0600.
4) ALL ELEVATIONS SHOWN HERE ARE APPROXIMATE BASED ON SEENTEC DRAWINGS & 3D MODEL.
5) FOR INSTRUMENT LOCATION OF SEENTEC SEE DWG NO: 11217D-ME-DW-ME220-P6001-00066.

0 1 2 3 4 5 10
SCALE 1:100
GRAPHIC SCALE IN METERS

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA
Engineers: Sargent & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001
Project Title: PACO POWER PLANT

DRAWING TITLE

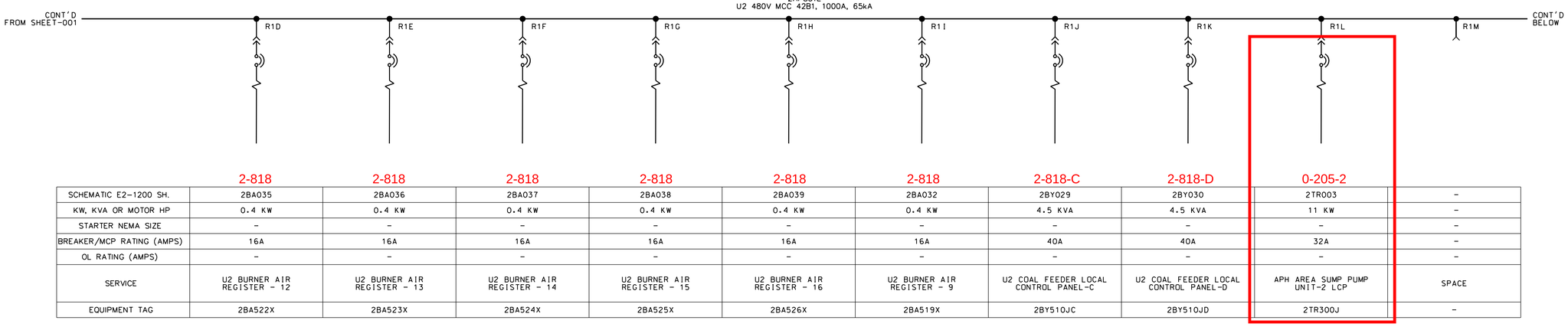
ELECTRICAL INSTALLATION BOILER AREA UNIT#2 PLAN AT EL.(+)20.200M

DRAWING NUMBER	REVISION
E2-0603	2
SHEET 001 OF 004	

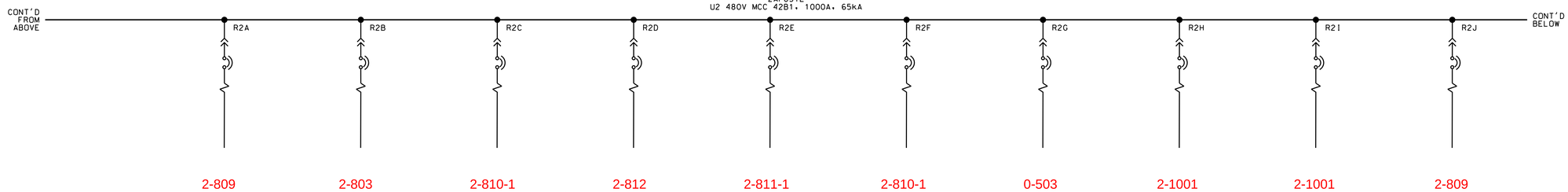
CAD FILE: E2-0603-001.DGN

DRAWING RELEASE RECORD

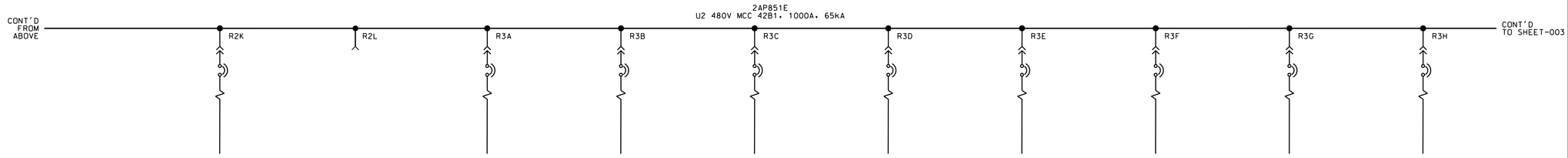
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	29SEP2015	R.JOSHI	A.PATEL/R.BEEDIE	Y.MISHRA/K.NOMANBHOY	ISSUED FOR CONSTRUCTION
1	10APRIL2017	K. PATEL	R. BEEDIE	K. NOMANBHOY	ISSUED FOR CONSTRUCTION UNDER PROJECT #13426-000
2	14JUL2017	K.SHAH	R.DESAI/R.BEEDIE	Y.MISHRA/K.NOMANBHOY	ISSUED FOR CONSTRUCTION



	2-818	2-818	2-818	2-818	2-818	2-818	2-818-C	2-818-D	0-205-2	
SCHEMATIC E2-1200 SH.	2BA035	2BA036	2BA037	2BA038	2BA039	2BA032	2BY029	2BY030	2TR003	-
KW, KVA OR MOTOR HP	0.4 KW	0.4 KW	0.4 KW	0.4 KW	0.4 KW	0.4 KW	4.5 KVA	4.5 KVA	11 KW	-
STARTER NEMA SIZE	-	-	-	-	-	-	-	-	-	-
BREAKER/MCP RATING (AMPS)	16A	16A	16A	16A	16A	16A	40A	40A	32A	-
OL RATING (AMPS)	-	-	-	-	-	-	-	-	-	-
SERVICE	U2 BURNER AIR REGISTER - 12	U2 BURNER AIR REGISTER - 13	U2 BURNER AIR REGISTER - 14	U2 BURNER AIR REGISTER - 15	U2 BURNER AIR REGISTER - 16	U2 BURNER AIR REGISTER - 9	U2 COAL FEEDER LOCAL CONTROL PANEL-C	U2 COAL FEEDER LOCAL CONTROL PANEL-D	APH AREA SUMP PUMP UNIT-2 LCP	SPACE
EQUIPMENT TAG	2BA522X	2BA523X	2BA524X	2BA525X	2BA526X	2BA519X	2BY510JC	2BY510JD	2TR300J	-



	2-809	2-803	2-810-1	2-812	2-811-1	2-810-1	0-503	2-1001	2-1001	2-809
SCHEMATIC E2-1200 SH.	2CB001	2CR002	2BA011	2BA012	2BY036	2BA013	2WS003	2HC006	2HC003	2BD001
KW, KVA OR MOTOR HP	0.2 KW	0.75 KW	0.4 KW	1.5 KW	0.2 KW	0.75 KW	0.2 KW	1.9 KW	4.15 KW	2.2 KW
STARTER NEMA SIZE	-	-	-	-	-	-	-	-	-	-
BREAKER/MCP RATING (AMPS)	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A
OL RATING (AMPS)	-	-	-	-	-	-	-	-	-	-
SERVICE	U2 CONTINUOUS BLOWDOWN STOP MOV	U2 CRH STEAM FOR AUX. STEAM C/V INLET STOP MOV	U2 F.D.FAN B OUTLET DAMPER	U2 G.A.H INLET DAMPER-B	U2 G.A.H OUTLET DAMPER (P.A)	U2 G.A.H OUTLET DAMPER (S.A)	U2 SERVICE WATER FOR GAH-B STOP VALVE	U2 HOIST BOX FOR GAH C	U2 HOIST BOX FOR PA FAN	U2 HRA FRONT&DIVISION INLET HDR DRAIN STOP MOV
EQUIPMENT TAG	2CBD507	2CR509	2BA500B	2BA530B	2BY503B	2BA503B	2WS503	2HC506G	2HC503G	2BD530



	2-523	-	2-523	2-811-1	2-818-B	2-818-D	2-318	2-519	2-811-1	2-812-1
SCHEMATIC E2-1200 SH.	2S4002	-	2S4004	2BY038	2BY032	2BY034	2SB001	2FW025	2BY040	2BA021
KW, KVA OR MOTOR HP	0.2 KW	-	0.2 KW	0.4 KW	25 KVA	25 KVA	3.44 KW	0.75 KW	0.2 KW	1.1 KW
STARTER NEMA SIZE	-	-	-	-	-	-	-	-	-	-
BREAKER/MCP RATING (AMPS)	16A	-	16A	16A	50A	50A	100A	16A	16A	20A
OL RATING (AMPS)	-	-	-	-	-	-	-	-	-	-
SERVICE	U1 INERTING STEAM STOP MOV FOR PULVERIZER-B	SPACE	U2 INERTING STEAM STOP MOV FOR PULVERIZER-D	U2 P.A.FAN B OUTLET DAMPER	U2 PULVERIZER CLASSIFIER VFD PANEL - 2	U2 PULVERIZER CLASSIFIER VFD PANEL - 4	U2 SOOT BLOWER LOCAL CONTROL PANEL	U2 SPRAY WATER FOR FINAL SH C/V INLET STOP MOV	U2 TEMPERING AIR DAMPER	U2 RHR FG DMPR B HCU LOCP
EQUIPMENT TAG	2S4501B	-	2S4501D	2BY500B	2BY522J	2BY524J	2SB501J	2FW510	2BY502B	2BA529JB

NOTES

1. FOR SYMBOLS AND REFERENCE DRAWINGS REFER SHT.001 OF THIS DRAWING.

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA

Engineers: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

KEY DIAGRAM
U2 480V MCC 42B1
(2AP851E)

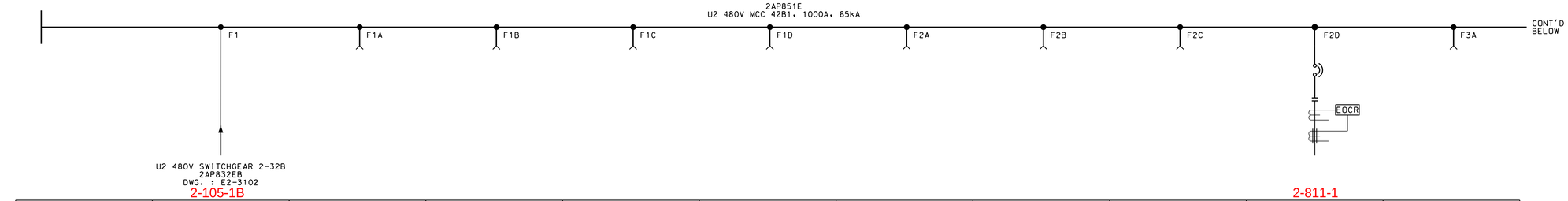
DRAWING NUMBER	REVISION
E2-1118	0

SHEET 002 OF 004

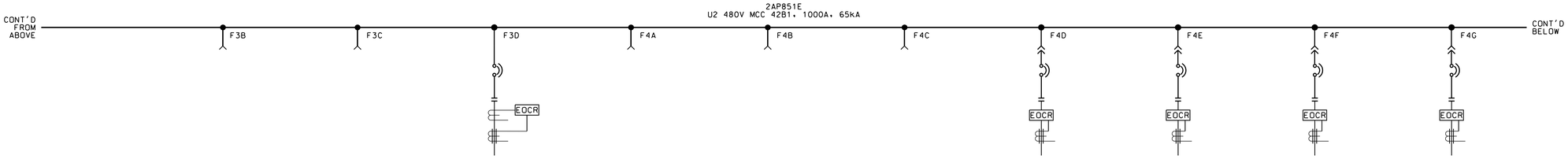
DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	05SEP2015	N.NIKAM/V.PATEL	R.DESAI/K.PATEL	Y.MISHRA/K.NOMANBHOY	ISSUED FOR CONSTRUCTION

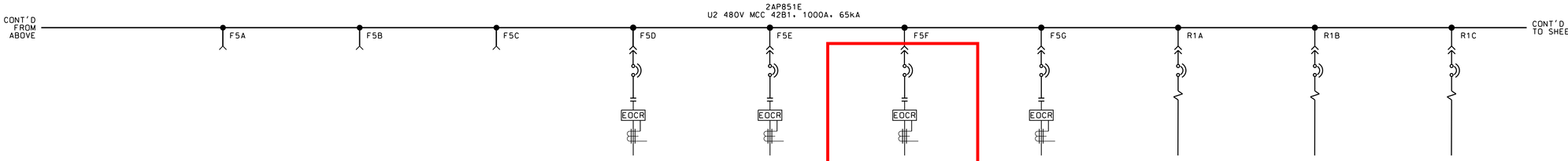
CAD FILE: E2-1118-002.DGN



									2-811-1	
SCHEMATIC E2-1200 SH.	-	-	-	-	-	-	-	-	2S2004	-
KW, KVA OR MOTOR HP	-	-	-	-	-	-	-	-	75 KW	-
STARTER NEMA SIZE	-	-	-	-	-	-	-	-	4	-
BREAKER/MCP RATING (AMPS)	-	-	-	-	-	-	-	-	320A (1920-3840)	-
OL RATING (AMPS)	-	-	-	-	-	-	-	-	(20-240)A	-
SERVICE	MAIN LUGS	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	U2 SA FAN MOTOR-B	SPACE
EQUIPMENT TAG	-	-	-	-	-	-	-	-	2S2502CB	-



			0-607-2				2-818	0-709	2-818-C	2-818-D
SCHEMATIC E2-1200 SH.	-	-	0CH005	-	-	-	2S2002	2NH002	2OL014	2OL015
KW, KVA OR MOTOR HP	-	-	90 KW	-	-	-	5.5 KW	5.5 KW	3.7 KW	3.7 KW
STARTER NEMA SIZE	-	-	5	-	-	-	1	1	1	1
BREAKER/MCP RATING (AMPS)	-	-	320A (1920-3840)	-	-	-	20A (120-240)	20A (120-240)	20A (120-240)	20A (120-240)
OL RATING (AMPS)	-	-	(20-240)A	-	-	-	(5-60)A	(5-60)A	(5-60)A	(5-60)A
SERVICE	SPACE	SPACE	BELT CONVEYOR TC-05B	SPACE	SPACE	SPACE	U2 CA FAN MOTOR-B	DILUTION AIR FAN #2 B	U2 PULVERIZER MILL LUBE OIL PUMP-C	U2 PULVERIZER MILL LUBE OIL PUMP-D
EQUIPMENT TAG	-	-	0CH804GB	-	-	-	2S2501CB	2NH602CB	2OL503P	2OL504P



				2-519	2-519	0-205-2		2-801	2-818	2-818
SCHEMATIC E2-1200 SH.	-	-	-	2FW009	2FW010	2TR002	-	2MS003	2BA033	2BA034
KW, KVA OR MOTOR HP	-	-	-	2.2 KW	2.2 KW	7.5 KW	-	2.2 KW	0.4 KW	0.4 KW
STARTER NEMA SIZE	-	-	-	1	1	1	1	-	-	-
BREAKER/MCP RATING (AMPS)	-	-	-	12A (70-140)	12A (70-140)	32A (190-380)	20A (120-240)	16A	16A	16A
OL RATING (AMPS)	-	-	-	(0.5-10)A	(0.5-10)A	(5-60)A	(5-60)A	-	-	-
SERVICE	SPACE	SPACE	SPACE	U2 BOILER FEED WATER PUMP 2 AUX. OIL PUMP	U2 BOILER FEED WATER PUMP 3 AUX. OIL PUMP	U2-BOILER BLOWDOWN PUMP 2	SPARE	U2 MAIN STEAM START-UP VENT STOP MOV	U2 BURNER AIR REGISTER - 10	U2 BURNER AIR REGISTER - 11
EQUIPMENT TAG	-	-	-	2FW309PB	2FW309PC	2TR006PB	-	2MS503	2BA520X	2BA521X

NOTES

SYMBOLS

	MOULDED CASE CIRCUIT BREAKER (MCCB) MAGNETIC ONLY
	MOULDED CASE CIRCUIT BREAKER (MCCB) THERMAL MAGNETIC
	MINIATURE CIRCUIT BREAKER (MCB)
	CONTACTOR
EOCR	ELECTRONIC OVER CURRENT RELAY
	ZERO PHASE SEQUENCE CURRENT TRANSFORMER
	TRANSFORMER
	CURRENT TRANSFORMER

REFERENCE DRAWINGS

11217D-EL-DW-EB330-P6062-00001	SINGLE LINE DIAGRAM OF MOTOR CONTROL CENTER
E2-3102	KEY DIAGRAM LOW VOLTAGE SWITCHGEAR 2-32A & B (2AP832EA/B)

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA

Engineers: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

KEY DIAGRAM
U2 480V MCC 42B1
(2AP851E)

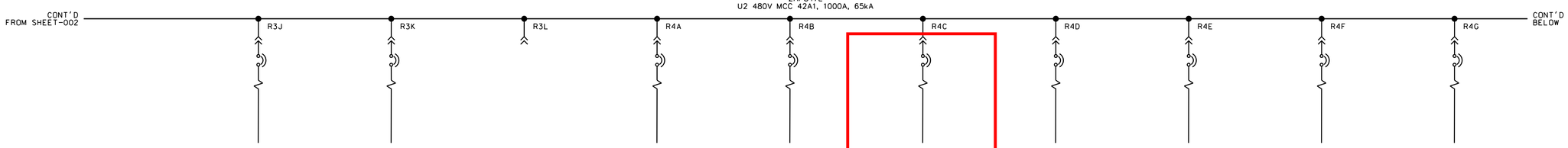
DRAWING NUMBER	REVISION
E2-1118	0

SHEET 001 OF 004

CAD FILE: E2-1118-001.DGN

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	05SEP2015	N.NIKAM/V.PATEL	R.DESAI/K.PATEL	Y.MISHRA/K.NOMANBHOY	ISSUED FOR CONSTRUCTION



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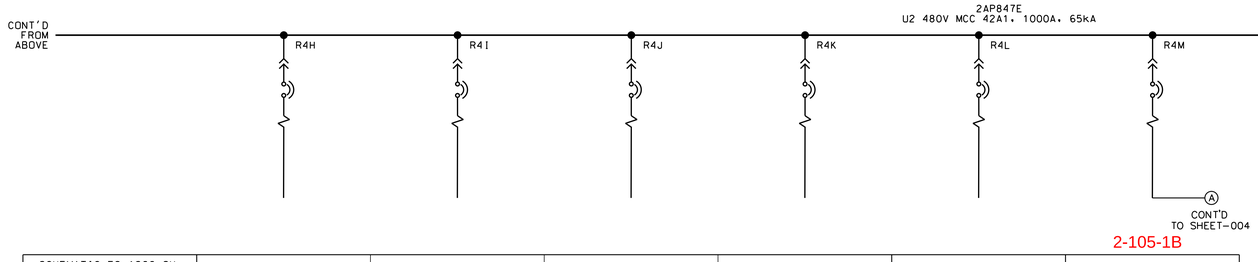
SCHEMATIC E2-1200 SH.	2FW024	2BY039	-	2BA020	2BA022	2TR005	2EW001	-	-	-
KW, KVA OR MOTOR HP	0.75 KW	0.2 KW	-	1.1 KW	1.1 KW	0.75 KW	63 A	-	-	-
STARTER NEMA SIZE	-	-	-	-	-	-	-	-	-	-
BREAKER/MCP RATING (AMPS)	16A	16A	-	20A	20A	16A	63A	16A	16A	16A
OL RATING (AMPS)	-	-	-	-	-	-	-	-	-	-
SERVICE	U2 SPRAY WATER FOR SH1 C/V INLET STOP MOV	U2 TEMPERING AIR DAMPER	SPACE	U2 RHR FG DMPR A HCU LOCP	U2 ECON FG DMPR A HCU LOCP	LCP FOR BLR ELEVATOR PIT SUMP PUMP UNIT#2	WELDING RECEPTACLE : UNIT-2 BOILER AREA	SPARE	SPARE	SPARE
EQUIPMENT TAG	2FW503	2BY502A	-	2BA529JA	2BA529JC	2TR301E	2EW002E,2EW003E	-	-	-



	2-105-1B					
SCHEMATIC E2-1200 SH.	-	-	-	-	-	-
KW, KVA OR MOTOR HP	-	-	-	-	-	25 KVA
STARTER NEMA SIZE	-	-	-	-	-	-
BREAKER/MCP RATING (AMPS)	16A	20A	40A	50A	63A	50A
OL RATING (AMPS)	-	-	-	-	-	-
SERVICE	SPARE	SPARE	SPARE	SPARE	SPARE	TRANSFORMER MAIN
EQUIPMENT TAG	-	-	-	-	-	-

NOTES

1. FOR SYMBOLS AND REFERENCE DRAWINGS REFER SHT.001 OF THIS DRAWING.

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE. INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA

Engineers: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

KEY DIAGRAM
U2 480V MCC 42A1
(2AP847E)

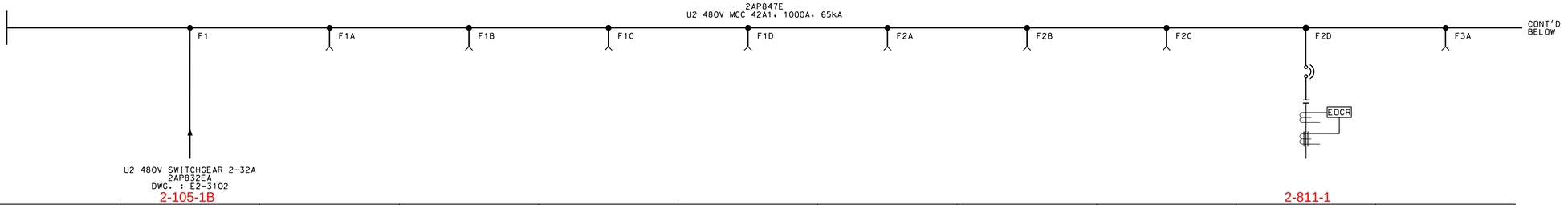
DRAWING NUMBER	REVISION
E2-1115	0

SHEET 003 OF 004

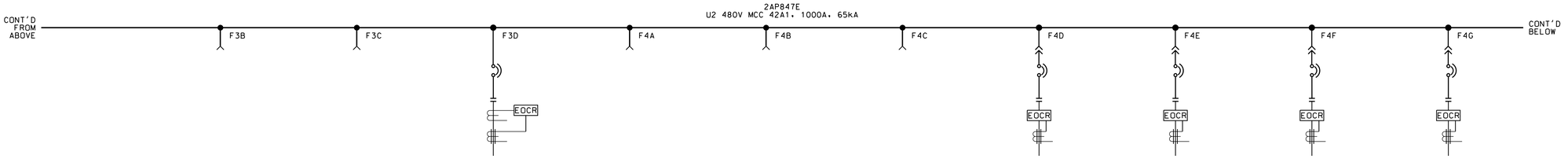
DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	05SEP2015	N.NIKAM/V.PATEL	R.DESAI/K.PATEL	Y.MISHRA/K.NOMANBHOY	ISSUED FOR CONSTRUCTION

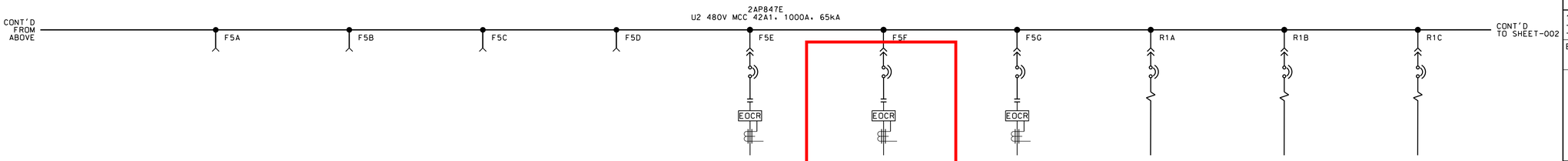
CAD FILE: E2-1115-003.DGN



									2-811-1	
SCHEMATIC E2-1200 SH.	2-105-1B	-	-	-	-	-	-	-	2S2004	-
KW, KVA OR MOTOR HP	-	-	-	-	-	-	-	-	75 KW	-
STARTER NEMA SIZE	-	-	-	-	-	-	-	-	4	-
BREAKER/MCP RATING (AMPS)	-	-	-	-	-	-	-	-	320A (1920-3840)	-
OL RATING (AMPS)	-	-	-	-	-	-	-	-	(20-240)A	-
SERVICE	MAIN LUGS	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	U2 SA FAN MOTOR-A	SPACE
EQUIPMENT TAG	-	-	-	-	-	-	-	-	2S2502CA	-



							2-818	0-709	2-818-A	2-818-B
SCHEMATIC E2-1200 SH.	-	-	-	-	-	-	2S2001	2NH001	20L012	20L013
KW, KVA OR MOTOR HP	-	-	-	-	-	-	5.5 KW	5.5 KW	3.7 KW	3.7 KW
STARTER NEMA SIZE	-	-	4	-	-	-	1	1	1	1
BREAKER/MCP RATING (AMPS)	-	-	320A (1920-3840)	-	-	-	20A (120-240)	20A (120-240)	20A (120-240)	20A (120-240)
OL RATING (AMPS)	-	-	(50-600)A	-	-	-	(5-60)A	(5-60)A	(5-60)A	(5-60)A
SERVICE	SPACE	SPACE	SPARE	SPACE	SPACE	SPACE	U2 CA FAN MOTOR-A	DILUTION AIR FAN #2 A	U2 PULVERIZER MILL LUBE OIL PUMP-A	U2 PULVERIZER MILL LUBE OIL PUMP-B
EQUIPMENT TAG	-	-	-	-	-	-	2S2501CA	2NH602CA	20L501P	20L502P



					2-519	0-205-2		2-801	2-818	2-818
SCHEMATIC E2-1200 SH.	-	-	-	-	2FW008	2TR001	-	2HP001	2BA024	2BA025
KW, KVA OR MOTOR HP	-	-	-	-	2.2 KW	7.5 KW	-	1.5 KW	0.45 KW	0.45 KW
STARTER NEMA SIZE	-	-	-	-	1	1	1	-	-	-
BREAKER/MCP RATING (AMPS)	-	-	-	-	12A (70-140)	32A (190-380)	20A (120-240)	16A	16A	16A
OL RATING (AMPS)	-	-	-	-	(0.5-10)A	(5-60)A	(5-60)A	-	-	-
SERVICE	SPACE	SPACE	SPACE	SPACE	U2 BOILER FEED WATER PUMP 1 AUX. OIL PUMP	U2-BOILER BLOWDOWN PUMP 1	SPARE	U2 2ND PLATEN SH STEAM FOR AUX.STEAM C/V INLET STOP MOV	U2 BURNER AIR REGISTER - 1	U2 BURNER AIR REGISTER - 2
EQUIPMENT TAG	-	-	-	-	2FW309PA	2TR006PA	-	2HP527	2BA511X	2BA512X

NOTES

SYMBOLS

	MOULDED CASE CIRCUIT BREAKER (MCCB) MAGNETIC ONLY
	MOULDED CASE CIRCUIT BREAKER (MCCB) THERMAL MAGNETIC
	MINIATURE CIRCUIT BREAKER (MCB)
	CONTACTOR
EOCR	ELECTRONIC OVER CURRENT RELAY
	ZERO PHASE SEQUENCE CURRENT TRANSFORMER
	TRANSFORMER
	CURRENT TRANSFORMER

REFERENCE DRAWINGS

11217D-EL-DW-EB330-P6062-00001	SINGLE LINE DIAGRAM OF MOTOR CONTROL CENTER
E2-3102	KEY DIAGRAM LOW VOLTAGE SWITCHGEAR 2-32A & B (2AP832EA/B)

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA

Engineers: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

KEY DIAGRAM
U2 480V MCC 42A1
(2AP847E)

DRAWING RELEASE RECORD

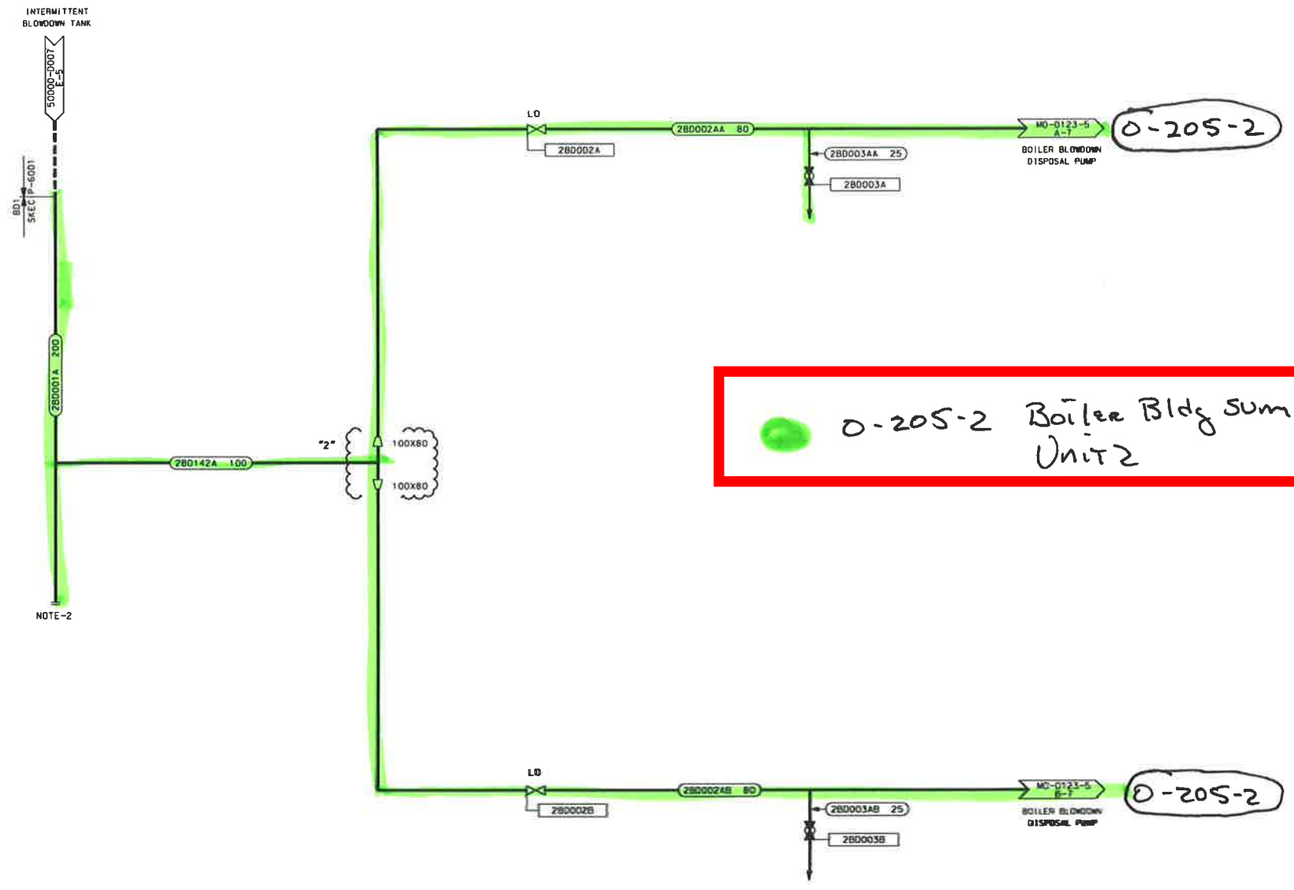
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	05SEP2015	N.NIKAM/V.PATEL	R.DESAI/K.PATEL	Y.MISHRA/K.NOMANBHOY	ISSUED FOR CONSTRUCTION

DRAWING NUMBER	REVISION
E2-1115	0

SHEET 001 OF 004

CAD FILE: E2-1115-001.DGN

PDC NUMBER	DESIGN PRESSURE (bar(g))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (bar(g))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (bar(g))	REMARKS
BD1	7.00	171.000	0.19 "2"	102.600	D	S&L 0105	D	PAC 0659	A1	10.50	ASTM A106 GR B



O-205-2 Boiler Bldg Sumps/Drains Unit 2

NOTES:
1. FOR LEGENDS AND SYMBOLS REFER TO DRAWING NUMBER M0-0100.
2. TEE WITH BLIND FLANGE IS PROVIDED FOR DRAINING OF HYDROTEST WATER.

REFERENCE DRAWINGS	
50000-D007	P&ID OF BLOW DOWN (112178-ME-DW-ME220-P5001-00093)

HOLD INFORMATION	
NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractor: SK E&C USA
Engineer: Bargas & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001
Project Title: PACO POWER PLANT
DRAWING TITLE: P & ID BOILER DRAINS & VENTS

DRAWING NUMBER	REVISION
M2-0136	2

SHEET 1 OF 1

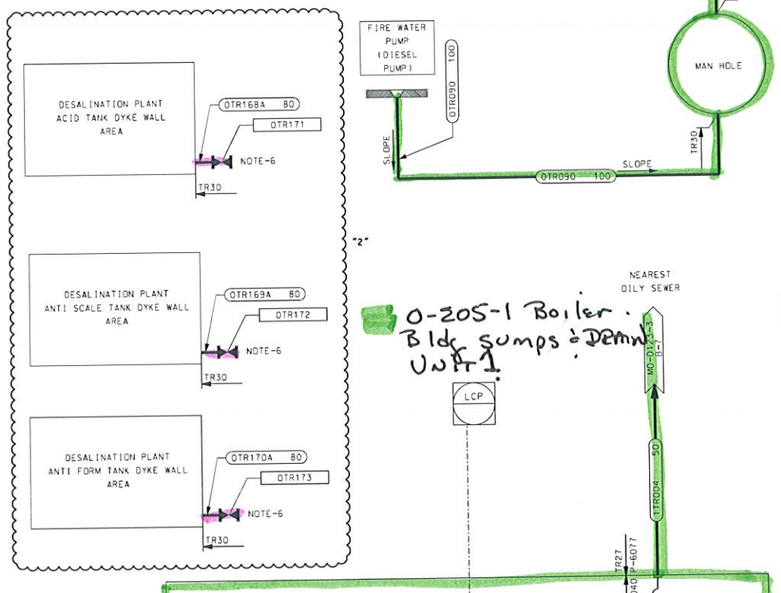
CAD FILE: M2-0136.DGN

DRAWING RELEASE RECORD

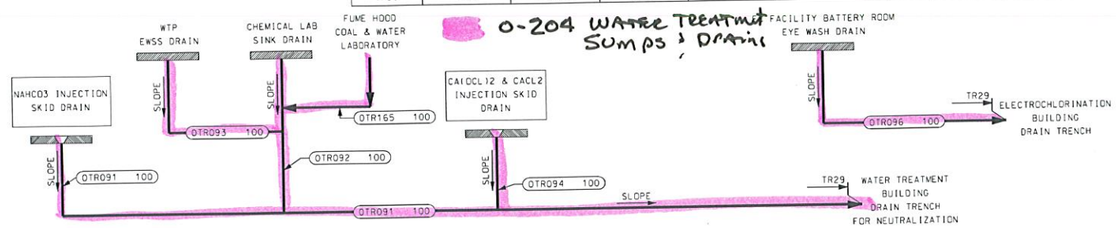
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-27-2013	S. PATIL	S. KELKAR	Y. MISHRA	ISSUED FOR CONSTRUCTION
1	04-30-2014	S. PATIL	K. BELLIGUNDU	Y. MISHRA	ISSUED FOR CONSTRUCTION WITH OPTION 2A
2	12-23-2014	M.D. PATEL	K. BELLIGUNDU	Y. MISHRA	ISSUED FOR CONSTRUCTION

POC NUMBER	DESIGN PRESSURE (barG))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (barG))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (barG))	REMARKS
TR1	3.50	45.000	1.00	30.000	N	S&L 0071	D	PAC 0659	N	NA	CI SOIL PIPE
TR26	3.50	45.000	0.67	30.000	D	S&L 0095	D	PAC 0659	N	5.25	CPVC
TR27	3.50	45.000	0.52	30.000	D	S&L 0095	D	PAC 0659	N	5.25	CPVC
TR29	3.50	45.000	1.00	30.000	D	S&L 0095	D	PAC 0659	N	NA	CPVC
TR30	3.50	45.000	1.00	30.000	D	PAC 0091	D	PAC 0659	N	NA	CPVC

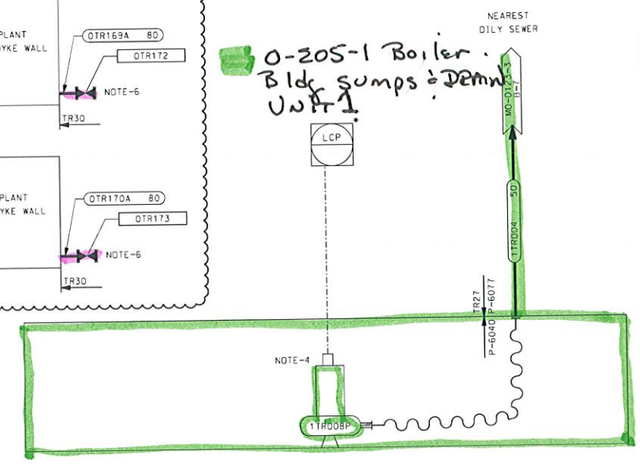
0-205-1



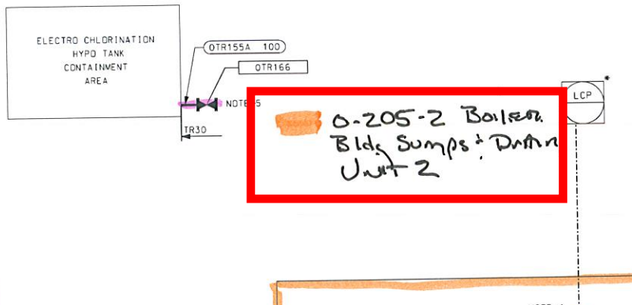
0-204 WATER TREATMENT Sumps & Drains



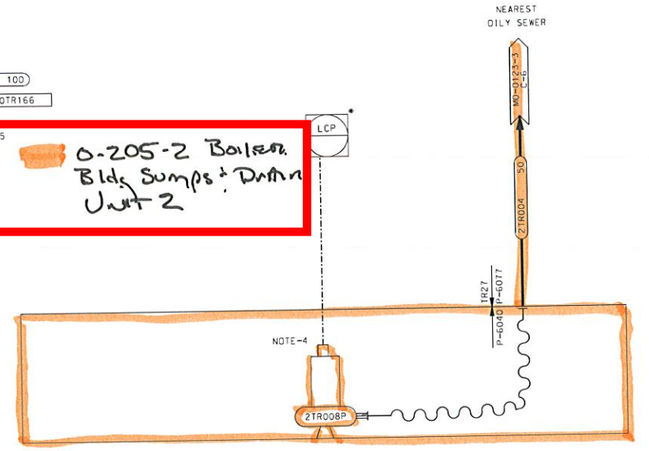
0-205-1 Boiler Bldg Sumps & Drains Unit 1



BOILER ELEVATOR PIT SUMP PUMP UNIT#1
1 x 100%
CAPACITY : 5 CUM/HR
TDH : 2.3 MLC

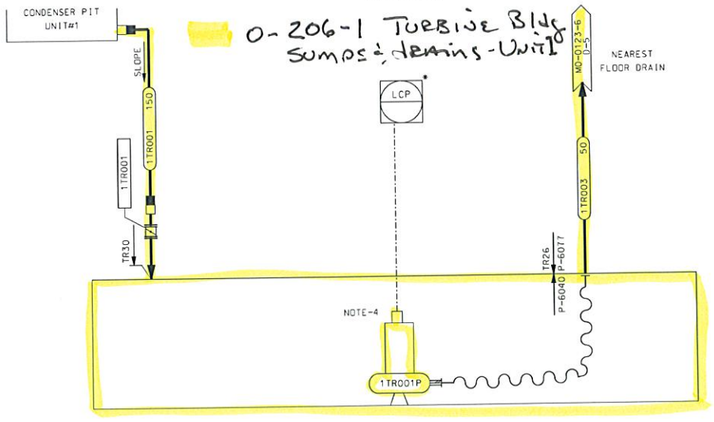


0-205-2 Boiler Bldg Sumps & Drains Unit 2



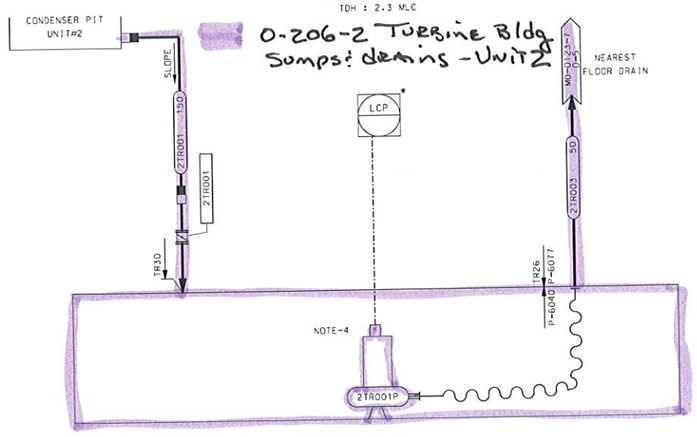
BOILER ELEVATOR PIT SUMP PUMP UNIT#2
1 x 100%
CAPACITY : 5 CUM/HR
TDH : 2.3 MLC

0-206-1 Turbine Bldg Sumps & drains - Unit 1



CW PIT SUMP PUMP UNIT#1
1 x 100%
CAPACITY : 5 CUM/HR
TDH : 3 MLC

0-206-2 Turbine Bldg Sumps & drains - Unit 2



CW PIT SUMP PUMP UNIT#2
1 x 100%
CAPACITY : 5 CUM/HR
TDH : 3 MLC

NOTES:

1. FOR GENERAL NOTES REFER TO SHEET 1 OF THIS DRAWING.
2. FOR INDIVIDUAL EQUIPMENT DRAIN. SEE DRAWING NO. MO-0135.
3. " * " MARKED INSTRUMENTS SHALL BE SUPPLIED BY MISC. SUMP PUMPS PACKAGE SUPPLIER (P-6040).
4. THE PUMP SHALL HAVE FLOAT LEVEL SWITCH INTEGRAL TO THE PUMP. NO ADDITIONAL LEVEL INSTRUMENTS FOR SUMP ARE REQUIRED.
5. RAIN WATER COLLECTED INSIDE ELECTRO CHLRONATION HYPO TANK CONTAINMENT AREA WILL BE DISPOSED OFF BY OPENING ISOLATION VALVE LOCATED OUTSIDE CONTAINMENT AREA.
6. WASTE WATER COLLECTED INSIDE DESALANIATION AREA CHEMICAL TANK CONTAINMENT WILL BE DISPOSED OFF BY OPENING ISOLATION VALVE LOCATED OUTSIDE CONTAINMENT AREA.

REFERENCE DRAWINGS	
MO-0604	COMPOSITE DRAWING EMBEDDED PIPING FIRE WATER PUMP SHELTER AREA
MO-0135	P&ID FOR EQUIPMENT DRAINS AND VENTS

DRAWING RELEASE RECORD					
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	04-25-2014	M.D.PATEL	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION WITH OPTION 2A UPDATES
1	03-19-2015	M.MISHRA	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
2	07-10-2015	N. PAREKH	K. BELLIGUNDU	Y.MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractor: SK E&C USA
Engineer: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

P & ID

WASTE WATER SYSTEM

DRAWING NUMBER	REVISION
MO-0123	2

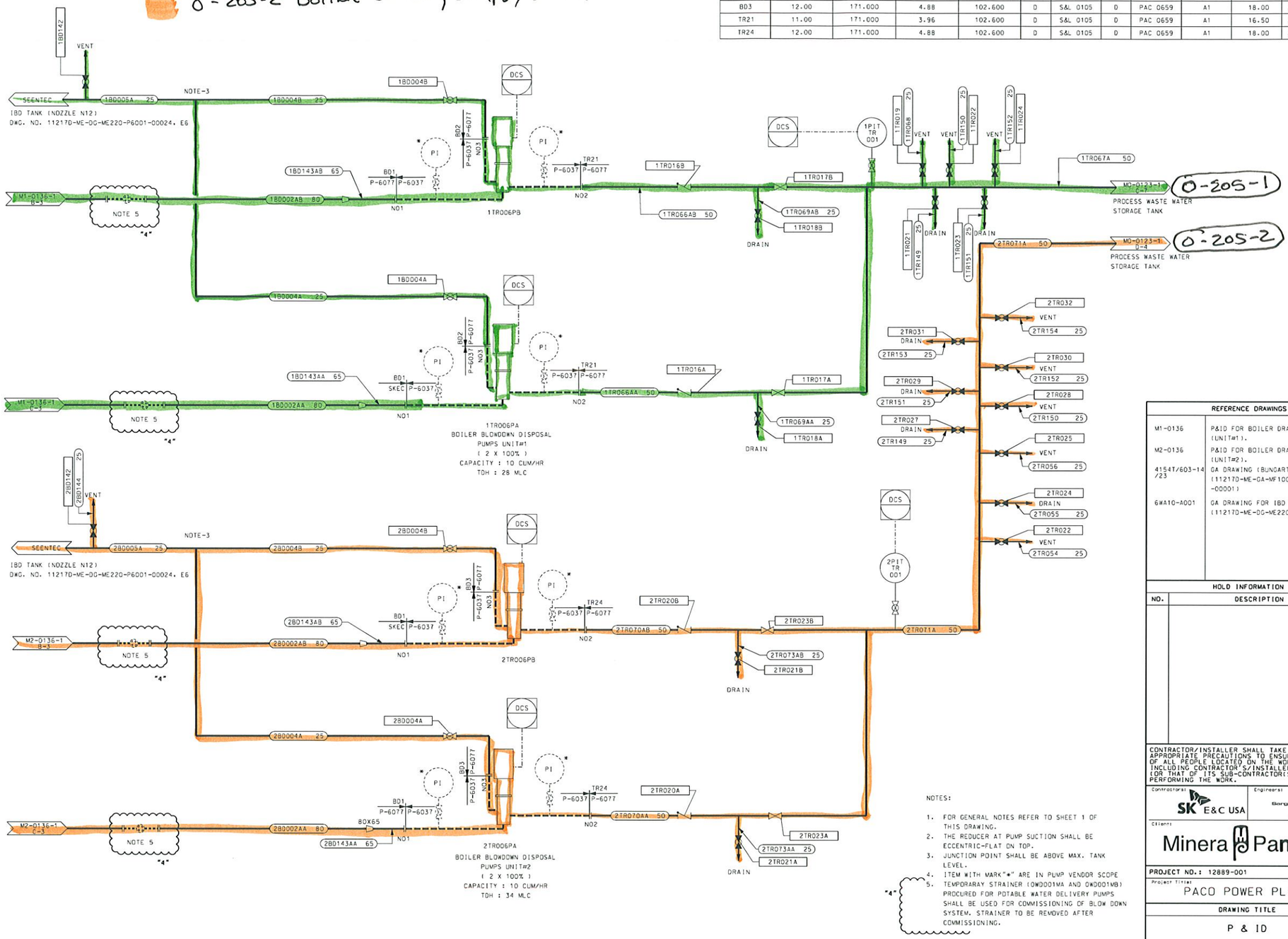
SHEET 9 OF 9

CAD FILE: MO-0123-009.DGN

0-205-1 Boiler Building Sumps/Demins

0-205-2 Boiler Building Sumps/Demins

PDC NUMBER	DESIGN PRESSURE (bar(g))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (bar(g))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (bar(g))	REMARKS
BD1	7.00	171.000	0.19	102.600	D	S&L 0105	D	PAC 0659	A1	10.50	ASTM A106 GR B
BD2	11.00	171.000	3.96	102.600	D	S&L 0105	D	PAC 0659	A1	16.50	ASTM A106 GR B
BD3	12.00	171.000	4.88	102.600	D	S&L 0105	D	PAC 0659	A1	18.00	ASTM A106 GR B
TR21	11.00	171.000	3.96	102.600	D	S&L 0105	D	PAC 0659	A1	16.50	ASTM A106 GR B
TR24	12.00	171.000	4.88	102.600	D	S&L 0105	D	PAC 0659	A1	18.00	ASTM A106 GR B



NOTES:

1. FOR GENERAL NOTES REFER TO SHEET 1 OF THIS DRAWING.
2. THE REDUCER AT PUMP SUCTION SHALL BE ECCENTRIC-FLAT ON TOP.
3. JUNCTION POINT SHALL BE ABOVE MAX. TANK LEVEL.
4. ITEM WITH MARK "*" ARE IN PUMP VENDOR SCOPE
5. TEMPORARAY STRAINER (OWD001MA AND OWD001MB) PROCURED FOR POTABLE WATER DELIVERY PUMPS SHALL BE USED FOR COMMISSIONING OF BLOW DOWN SYSTEM. STRAINER TO BE REMOVED AFTER COMMISSIONING.

REFERENCE DRAWINGS	
M1-0136	P&ID FOR BOILER DRAINS & VENTS (UNIT#1).
M2-0136	P&ID FOR BOILER DRAINS & VENTS (UNIT#2).
4154T/603-14/23	GA DRAWING (BUNGARTZ PUMP) (11217D-ME-GA-MF100-03-P6037-00001)
6WA10-A001	GA DRAWING FOR IBD TANK (SEENTEC) (11217D-ME-DG-ME220-P6001-00024)

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA | Engineers: Bergen & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

P & ID

WASTE WATER SYSTEM

DRAWING NUMBER	REVISION
MO-0123	4

SHEET 5 OF 9

CAD FILE: MO-0123-005.DGN

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
4	07-10-2015	N.PAREKH	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
2	12-23-2014	M.D.PATEL	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
3	03-19-2015	M.MISHRA	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION

PDC NUMBER	DESIGN PRESSURE (barg)	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (barg)	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSULATION TYPE	FIELD TEST PRESSURE (barg)	REMARKS
TR11	3.50	45.000	1.73	30.000	0	PAC 0100	0	PAC 0659	N	5.25	ASTM A53 GR B
TR14	3.50	45.000	1.00	30.000	0	PAC 0100	0	PAC 0659	N	5.25	ASTM A53 GR B
TR5	3.50	45.000	1.00	30.000	W	S&L 0092	0	PAC 0659	N	5.25	HDPE
TR8	4.00	45.000	3.50	30.000	0	PAC 0091	0	PAC 0659	N	6.00	CPVC

0-205-2 Boiler Building Sumps & Drain's

EYE WASH AND SAFETY SHOWER DRAIN- AMMONIA STORAGE FACILITY (NOTE - 5)

0-501

IDE

DESALINATION PLANT CHEMICAL DRAIN VENDOR DRAWING 112170-ME-DG-WU160-P6017-00002

TR5 P-6017 P-6075

TP-4

0TR051A 50

SLOPE

TR5

NEUTRALIZATION SYSTEM REFER TO WATER TREATMENT VENDOR DRAWING : A3-05800120425 -01-01 (SHEET 12 OF 13)

0-201

TP-07 TR8 P-6010 P-6075

0TR165

VENT

0TR154A 25

0TR009A 50

MO-0123-1 C-4

PROCESS WASTE WATER STORAGE TANK

0TR149A 40

FLUE GAS HOPPER OF APH (UNIT#1)

TO FLY ASH SILOS

P-6077 P-6015 NOTE-7

P-6015 P-6077 NOTE-7

0-205-2

TR14 P-6077

1TR051B 150

1TR051A 150

TR14 P-6077

SLOPE

1TR053A 150

NOTE-8

SLOPE

TR14

OCS

QLS TR 053 H

COMMON AIR PRE-HEATING (APH) WASH WATER BASIN CAPACITY : 380 CUM NOTE-9

0-205-2

FLUE GAS HOPPER OF APH (UNIT#2)

TO FLY ASH SILOS

P-6077 P-6015 NOTE-7

P-6015 P-6077 NOTE-7

TR14 P-6077

2TR051B 150

2TR051A 150

TR14 P-6077

2TR052A 150

SLOPE

LS HH

LS H

LS L

LS LL

LCP (NOTE-2)

NOTE-8

TR13

2TR013

PI

3"

2TR053B 150

TR11

P-6040 P-6077

2TR005P

APH AREA SUMP PIT (UNIT#2) CAPACITY : 10 CUM

APH AREA SUMP PUMP (1 X 100%) CAPACITY : 132 CUM/HR HEAD : 6 MLC

NOTE:

1. FOR GENERAL NOTES REFER TO SHEET 1 OF THIS DRAWING.
2. SUMP LEVEL HI-HI ALARM AND ON/ OFF STATUS OF EACH PUMP SHALL BE WIRED TO DCS FOR MONITORING.
3. " * " MARKED INSTRUMENTS WITH ROOT VALVES AND REQUIRED ACCESSORIES AS INDICATED SHALL BE SUPPLIED BY MISC SUMP PUMPS PACKAGE SUPPLIER (P-6040).
4. COMMON AIR PRE HEATER AREA(APH) WASTE SHALL BE DISPOSED BY TRUCK FROM APH BASIN.
5. EYE WASH AND SAFETY SHOWER WASTE SHALL BE DRAINED LOCALLY.
6. DELETED.
7. DURING FLUE GAS HOPPER WASH (APH WASH) TEMPORARY PIPING (SUPPLIED BY DYPE) SHALL BE CONNECTED WITH TEMPORARY HOSE TO DRAIN PIPING.
8. BREAK FLANGES ARE PROVIDED FOR REMOVAL OF SPOOL DURING MAINTENANCE OF PIPE.

REFERENCE DRAWINGS	
LATER	P&ID FOR DESALINATION WATER SYSTEM - (LATER)
E3-05800120425 -01-01 (SHEET 13 OF 13)	P&ID FOR WATER TREATMENT SYSTEM (112170-ME-DG-WU149-P6010 -00001)
50000-0008	P&ID OF COOLING & SERVICE WATER

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractor: SK E&C USA

Engineer:

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE: P & ID

WASTE WATER SYSTEM

DRAWING NUMBER	REVISION
MO-0123	3

SHEET 4 OF 9

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	06-21-2013	M.D.PATEL	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
1	04-25-2014	M.D.PATEL	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION WITH OPTION 2A UPDATES
2	03-19-2015	M.MISHRA	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
3	10-01-2015	N.PAREKH	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION

0-205-2 BOILER BLDG SUMPS / DRAINS UNIT 2

PDC NUMBER	DESIGN PRESSURE (barⓖ)	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (barⓖ)	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (barⓖ)	REMARKS
TR1	3.50	45.000	1.00	30.000	N	S&L 0071	D	PAC 0659	N	NA	CI SOIL PIPE
TR10	4.50	45.000	4.13	30.000	W	S&L 0092	D	PAC 0659	N	6.75	HDPE
TR27	3.50	45.000	0.52	30.000	D	S&L 0095	D	PAC 0659	N	5.25	CPVC
TR28	3.50	105.000	1.00	100.000	N	S&L 0071	D	PAC 0659	N	5.25	CI SOIL PIPE
TR7	4.50	45.000	4.13	30.000	D	S&L 0105	D	PAC 0659	N	6.75	ASTM A106 GR B

(0-205-1)

MO-0123-9 E-6

OILY DRAIN FROM FIRE WATER PUMP SHELTER

SLOPE

OTR032A 200

SCAPH DRAIN TANK EMERGENCY DRAIN/OVERFLOW

UNIT#1 SEENTEC

UNIT#2 SEENTEC

(0-205-1)

(0-205-2)

MO-0123-9 E-5

BOILER ELEVATOR PIT UNIT#2

BOILER ELEVATOR PIT UNIT#1

(NOTE-8)

TR28 SLOPE

OTR043 100

OTR044 100

OTR147 100

1TR004 50

2TR004 50

2TR148 100

TR27

TR1 P-6075 P-6070

TR1 P-6075

MAN HOLE

TP-012

OTR035A 250

OTR048 250

OTR041A 250

MH

SLOPE

OTR042A 100

OTR046 200

OTR047 200

OTR039A 100

OTR164 100

EMERGENCY DIESEL GENERATOR FUEL TANK DRAIN

OTR162A 100

OTR162B 100

OILY DRAIN FROM EMERGENCY DIESEL GENERATOR

OTR163B 100

OTR163A 100

(0-206-1)

MO-0123-7 E-6

OILY DRAIN FROM TURBINE BUILDING

OTR031A 200

(0-205-1)

OILY DRAIN FROM FUEL OIL FORWARDING PUMP AREA

OTR034A 200

(NOTE-2)

LCP

LS HH

LS H

LS L

LS LL

DCS

OLS TR052

PS

"3"

OTR073AB 100

OTR001AA 100

PI2

PI1

OTR073AA 100

OTR022B

OTR021B

OTR022A

OTR021A

TR10 TR7 P-6075 P-6077

OTR152A 100

OTR018A 150

100 X 150

OTR153A 100

TR2 TR10 P-6077 P-6075

OTR151A 100

MO-0123-1 C-7

PROCESS WASTE WATER STORAGE TANK

(0-202)

OIL COLLECTION SUMP

TR7 P-6040 P-6077

OTR008PB

OTR008PA

TREATED EFFLUENT TRANSFER PUMP OWS-1

(2 x 100%)

CAPACITY : 84 CUM/HR

HEAD : 22 MLC

OIL WATER SEPARATOR (OWS)

1 X 100%

CAPACITY: 75 M3/HR

REFER OWS VENDOR (DONGHAE) GENERAL ARRANGEMENT DRAWING

(DRAWING NO:112170-ME-GA-MJ290-01-P6070-00001)

LEGENDS:

MH = MAN HOLE

NOTES:

1. FOR GENERAL NOTES REFER TO SHEET 1 OF THIS DRAWING.
2. TREATED EFFLUENT TRANSFER PUMP. FOR OWS SYSTEM INCLUDING INSTRUMENTS FOR RESPECTIVE SUMP, LCP ETC. SHALL BE PROVIDED BY MISC. SUMP PUMP SUPPLIER (P-6040).
3. USE THIS DRAWING IN CONJUNCTION WITH OILY SEWER LAYOUT (DG NO.: CO-0091 TO CO-0098)
4. DELETED.
5. SUMP LEVEL HI-HI ALARM AND ON/OFF STATUS OF EACH PUMP SHALL BE WIRED TO DCS FOR MONITORING.
6. " * " MARKED INSTRUMENTS WITH ROOT VALVES AND REQUIRED ACCESSORIES AS INDICATED SHALL BE SUPPLIED BY MISC SUMP PUMPS PACKAGE SUPPLIER (P-6040).
7. DELETED.
8. DRAIN FUNNEL OR CISP HUB FITTING SHALL BE USED AS PER LAYOUT REQUIREMENT.

REFERENCE DRAWINGS	
CO-0091 TO CO-0098	OILY SEWER PLAN
VD-6070-S02-012	P&ID OWS (112170-ME-DG-MJ290-01-P6070-00001)

HOLD INFORMATION	
NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractor: SK E&C USA

Engineer: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

P & ID

WASTE WATER SYSTEM

DRAWING NUMBER	REVISION
MO-0123	3
SHEET 3 OF 9	

CAD FILE: MO-0123-003.DGN

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	06-21-2013	M.D.PATEL	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
1	04-25-2014	M.D.PATEL	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION WITH OPTION 2A UPDATES
2	03-19-2015	M.MISHRA	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
3	10-01-2015	N.PAREKH	K. BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION

0-205-2 BOILER BLDG SUMPS / DRAINS UNIT 2

PDC NUMBER	DESIGN PRESSURE (barG)	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (barG)	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (barG)	REMARKS
TR16	3.50	60.000	1.00	50.000	D	PAC 0094	D	PAC 0659	N	5.25	LINED CS
TR18	3.50	105.000	1.00	101.000	D	PAC 0140	D	PAC 0659	A1	NA	ASTM A312 GRTP304
TR21	11.00	171.000	3.96	102.600	D	S&L 0105	D	PAC 0659	A1	16.50	ASTM A106 GR B
TR24	12.00	171.000	4.88	102.600	D	S&L 0105	D	PAC 0659	A1	18.00	ASTM A106 GR B
	7.00	38.000	3.00	32.500	W	S&L 0092	D	PAC 0659	N	10.50	HDPE
	7.00	38.000	3.00	32.500	D	PAC 0091	D	PAC 0659	N	10.50	CPVC
	3.50	60.000	1.00	50.000	W	S&L 0092	D	PAC 0659	N	5.25	HDPE
TR7	4.50	45.000	4.13	30.000	D	S&L 0105	D	PAC 0659	N	6.75	ASTM A106 GR B
TR8	4.00	45.000	3.50	30.000	D	PAC 0091	D	PAC 0659	N	6.00	CPVC
WL1	5.20	35.000	5.07	30.000	D	PAC 0092	D	PAC 0659	N	7.80	GRP/FRP

VENT WITH BIRD SCREEN
NOTE-7
NOTE-11
DCS
OLIT TR001B
OLIT TR001A
SKEC
MANHOLE M1
100 NB
N6
N7
N8
TR7
N10
OTR001
SPARE
N11 100 NB
SPARE
N9 80 NB
SPARE
N16 100 NB
PROCESS WASTE WATER STORAGE TANK
STORAGE CAPACITY: 1605 m3
P-6033
MANHOLE M2
TR8
N14
OTR009A 50
OTR003
MO-0123-4 D-2
NEUTRALIZED WASTE TRANSFER PUMP (DEMINERALIZATION PLANT)
0-201
WL1
N3
OWL006A 100
SKEC
N12
OTEW TR 001A
OTE TR 001A
N13
OTEW TR 001B
OTE TR 001B
NOTE-14
DCS
TR24
N15
2TR160A 15
2TR161A 15
2TR145A
2TR071A 50
MO-0123-5 D-2
2TR015
2TR014A
BOILER BLOWDOWN DISPOSAL PUMPS UNIT#2 (BUNGARTZ PUMPS)
0-205-2
2TR026
2TR057 25
DRAIN
TR21
SKEC
N2
1TR170A
TR16
N4
1TR020
DRAIN
TR16
N5
N1
OTR001T
OTR002
OTR003A 100
OTR002A 150
DRAIN AND SAMPLE
OTR005A 80
OZSO TR 014
DCS
MO
OZSC TR 014
OTR014
1TR014A
1TR070 25
OTR151A 100
TR7
MO-0123-3 D-2
NOTE-14
1TR070A 50
OWS SYSTEM
0-202
1TR159A 15
1TR158A 15
MO-0123-5 D-2
1TR015
BOILER BLOWDOWN DISPOSAL PUMPS UNIT#1 (BUNGARTZ PUMPS)
0-205-1
"4A"
TR6 TP-5 P-6075 P-6017
SLOPE
IDE
OTR008A 150
DESALINATION FILTER BACKWASH DRAIN 112170-ME-DG-MJ160 -P6017-00002-3
TR6 TR16 P-6075 P-6077
NOTE-12
SLOPE
TR6
SLOPE
OTR010A 250
DCS
OZSO WL 032
OZSC WL 032
MO
OWL032
OWL006A 100
MO-0130-1 E-4
CW PUMP DISCHARGE
LO
OTR010B 250
M2-0111-4 C-3
2-506
CW RETURN PIPE UNIT#2
OTR010B
LO
OTR010A 250
M1-0111-4 C-3
1-506
CW RETURN PIPE UNIT#1
OTR010A
CHIMNEY FLUE DRAIN
250x100
SLOPE
NOTE-15
NOTE-13
TR18
P-6067
OTR061A 100
M1-0111-4 D-2
1-208
FGD BASIN UNIT#1
WIP
0-501
TP-3 TR31 P-6017 P-6075
IDE
DESALINATION EFFLUENT- BRINE 112170-ME-DG-MJ160 -P6017-00002-3
OTR062A 200
TR31 TR32
OTR150A 200
M1-0111-4 D-5
(NOTE-13)
FGD BASIN UNIT#1
OTR063A 200
OTR063A
OTR063B 200
OTR150B 200
OTR063B
M2-0111-4 D-2
(NOTE-13)
FGD BASIN UNIT#2
TR31 TR32

NOTES:

1. FOR LEGENDS & SYMBOL REFER TO DRAWING NO. MO-0100.
2. PIPING LOW POINT DRAINS & HIGH POINT VENTS TO BE PROVIDED.
3. ALL PIPE SIZES INDICATED IN THE P&ID ARE NOMINAL SIZES IN MM UNLESS OTHERWISE SPECIFIED.
4. MINIMUM SLOPE OF GRAVITY PIPE SHALL BE 1:200
5. DELETED.
6. DELETED.
7. VENT WITH BIRD SCREEN SHALL BE PROVIDED BY TANK VENDOR.
8. TANK MOUNTED LEVEL TRANSMITTER SHALL BE OF RADAR TYPE.
9. UNDER GROUND PIPES SHALL BE PROVIDED WITH A MINIMUM EARTH COVER OF 750 MM.
10. FIELD TEST PRESSURE '0' INDICATES THAT HYDROSTATIC TESTING IS NOT REQUIRED FOR THESE PIPES AS THESE GRAVITY LINES ARE OPEN TO ATMOSPHERE.
11. RADAR TYPE LEVEL TRANSMITTER WILL BE PROVIDED.
12. GAP SHALL BE PROVIDED BETWEEN TANK OUTLET PIPE AND GRAVITY DRAIN PIPE ENABLING AIR ENTRY.
13. HYDROSTATIC TEST NOT REQUIRED FOR DOWNSTREAM PIPING OF VALVE AS IT IS OPEN TO ATMOSPHERE.
14. TEST PORT PROVIDED TO MEASURE PRESSURE IN THE DOWNSTREAM OF PRESSURE REDUCING VALVE BY INSTALLING PRESSURE GAUGE.
15. ECCENTRIC REDUCER SHALL BE USED AT TERMINAL POINT.

REFERENCE DRAWINGS	
M1-0111-4	P&ID FOR CIRCULATING WATER SYSTEM
MO-0130-1	P&ID FOR SEA WATER SUPPLY SYSTEM
112170-ME-DG-MJ160 -P6017-00002	P&ID FOR DESALINATION SYSTEM
E3-05800120425	P&ID FOR WATER TREATMENT SYSTEM (112170-ME-DG-MJ149 -P6010-00001)

DRAWING RELEASE RECORD					
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
4	12-08-2015	N.PAREKH	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	WIP
2	03-19-2015	M. MISHRA	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
3	10-01-2015	N.PAREKH	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION

HOLD INFORMATION	
NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTORS)) PERFORMING THE WORK.

Contractor: SK E&C USA
Engineers: Sargent & Lundy
Client: Minera Panamá
PROJECT NO.: 12889-001
Project Title: PACO POWER PLANT
DRAWING TITLE: P & ID
WASTE WATER SYSTEM
DRAWING NUMBER: MO-0123
REVISION: 4A
SHEET 1 OF 9
CAD FILE: MO.0123-001.DGN

Startup Code	Equipment No	System Code	Equipment Description	Equipment Type	Furnish Spec
0-205-2	2TR300J	TR - WASTE WATER TREATMENT	APH AREA SUMP PUMP LCP	Instrument Panel	P-6040
0-205-2	2TR301E	TR - WASTE WATER TREATMENT	LCP FOR BLR ELEVATOR PIT SUMP PUMP UNIT#2	Local Electrical Equipment Panel	P-6040

Minera Panamá

PACO
MOTOR LIST

SK E&C Sargent & Lundy

Motor Tag	Client Tag	Description	Startup Code	Voltage Class
2TR005P	2TR005P	APH PUMP UNIT#2	0-205-2	LV
2TR006PA	2TR006PA	BOILER BLOW DOWN DISPOSAL PUMP A UNIT-II	0-205-2	LV
2TR006PB	2TR006PB	BOILER BLOW DOWN DISPOSAL PUMP B UNIT-II	0-205-2	LV
2TR008P	2TR008P	BLR ELEVATOR PIT SUMP PUMP UNIT#2	0-205-2	LV